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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,885	07/03/2003	Baojia Huang	AWG 001	6866

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EXAMINER

GIBSON, ERIC M

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



## Office Action Summary

**Application No.**

10/613,885

**Applicant(s)**

HUANG, BAOJIA

**Examiner**

Eric M Gibson

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

1. The abstract of the disclosure is objected to because it simply contains a recitation of elements and does not adequately provide a narrative description of the invention. Correction is required. See MPEP § 608.01(b).

### ***Claim Objections***

2. Claims 12-22 are objected to because of the following informalities: The preliminary amendment underlines the newly added claims. This is improper format. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 11-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
  - a. Claim 11 recites the limitation "the obstacle" in lines 5-9. There is insufficient antecedent basis for this limitation in the claim. There is no prior recitation of a single "obstacle" identified; Line 3 of the claim recites, "detecting circumferential obstacles as bodies." It is not clear how the detected circumferential obstacles detected as bodies are related to the later repeated recitation of "the" obstacle.

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b. Additionally in claim 11, because there also appears to be a missing essential step in the claim of somehow identifying one of the "circumferential obstacles detected as bodies" as "the obstacle" the claim is indefinite.

c. Claim 12 recites the limitation "an absolute value of  $da/dt$ " in line 2. There is insufficient antecedent basis for this limitation in the claim. There is no prior recitation of any means for calculating, determining, or processing any signals to achieve a value of  $da/dt$ . It is unknown what the value relates to, what signal or element it represents a " $da/dt$ " value of, or how it is measured in the context of the claim language. For example,  $da/dt$  can be a measured quantity of the obstacle or of the vehicle. It is not known which of these two options, or another entirely, the value is supposed to represent.

d. Claim 18 recites the limitation "determining the vertical and horizontal components" in line 2-3. This limitation is indefinite because it does not identify what vertical and horizontal components are being determined.

e. Claim 20 recites the limitation "providing a plurality of channels" in line 2. This limitation is indefinite because it does not identify what the "channels" are in reference to or which element of the claim is being provided with "channels".

f. Claims 13-17, 19, 21, and 22 are necessarily rejected as being dependent upon a rejected base claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hosokawa et al. (US005864391A).

a. As per claim 1, Hosokawa teaches a vehicle collision avoidance system (figure 18) that includes a rotating pulsed infrared laser beam scanner for generating a signal of an obstacle (210, figure 18), a processing circuit for processing the signal and generating a plurality of signals (220, figure 18), a processor for processing the plurality of signals and generating a braking signal (200, figure 18), and a braking apparatus responsive to the braking signal (241, figure 18).

b. As per claim 2, Hosokawa teaches scanning horizontally and vertically (figure 5).

c. As per claims 3 and 4, the scanner taught by Hosokawa is “operable to” scan an object from 1.6m to 120m, distances relevant in a collision avoidance system.

d. As per claim 7, Hosokawa teaches a vehicle collision avoidance method (figure 19) that includes determining features of an obstacle using a rotating pulsed infrared laser beam scanner (S20, figure 19), processing signals representative of the determined features (S70, figure 19), and braking the vehicle if the proceed signals indicate an imminent collision (S100, figure 19).

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e. As per claim 8, Hosokawa teaches scanning horizontally and vertically (figure 5).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5, 6, 9, and 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Hosokawa in view of Sizer, II (US004737958A).

a. As per claims 5, 6, 9, and 10, Hosokawa teaches the invention as explained in the rejection of claims 1 and 7. Hosokawa does not specify the exact specifications of the laser used in the invention. The use of laser scanners to detect objects in vehicle collision systems is well known in the art. The specific laser used in any application varies depending on the system's requirements. Furthermore, lasers can be tuned to achieve desired specifications, as is well known to one of ordinary skill in the art. One such known laser is the "Nd: YAG" laser, exemplified in the description of Sizer. It would have been obvious to one of ordinary skill in the art, at the time of invention, to include a laser well known in the art and tuned as one of ordinary skill in the art would to achieve desired performance qualities, such as the YAG laser, as exemplified in Sizer.

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6. Claims 11-15 and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosokawa in view of Maruko et al. (US20020091479A1).

a. As per claim 11, Hosokawa teaches a vehicle collision avoidance method (figure 19) that includes detecting obstacles using a rotating pulsed infrared laser beam scanner (S20, figure 19), determining a relative distance to the obstacle (S30, figure 19), and braking the vehicle if the proceed signals indicate an imminent collision (S100, figure 19). Hosokawa teaches generally applying braking to avoid a collision, but does not teach determining a time to collision and determining the braking force. Maruko teaches a braking control system with object detection system interaction that teaches determining a time to collision (page 6, [0049]) and determining the braking force to avoid a collision with the obstacle (page 8, [0068]). It would have been obvious to one of ordinary skill in the art, at the time of invention, to determine the time to collision and determine the braking force required to avoid a collision with the obstacle in the system of Hosokawa, as taught by Maruko, in order to properly implement the braking contemplated by Hosokawa.

b. As per claim 12, Maruko teaches determining target deceleration rate  $da/dt$  ( $Gx^*$ , page 5, [0039]).

c. As per claim 13, Maruko teaches a relative distance and a time to collision (page 6, [0049]).

d. As per claim 14, Maruko teaches determining the obstacle velocity (page 9, [0072]).

e. As per claim 15, Maruko teaches that the time to collision is determined from the second order factor of relative distance (page 6, [0049]).

f. As per claim 18, Maruko teaches time to collision determination (page 6, [0049]).

g. As per claim 19, Maruko teaches a rate of approach ( $dL/dt$ , page 6, [0049]).

h. As per claim 20, multiple channels are normally employed for use in a photo diode array for detecting the return path of the reflected laser light in the system and method of Hosokawa and Maruko.

i. As per claims 21 and 22, Maruko teaches determining the obstacle processing (page 9, [0072]), which includes factors that are mathematically related through well-known formulae.

7. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hosokawa and Maruko as applied to claim 11 above, and further in view of Shinmura et al. (US20010003810A1).

a. As per claims 16 and 17, the combination of Hosokawa and Maruko teaches the invention as explained in the rejection of claim 11. The combination does not teach determining and taking into account the bumpiness of the road in determining the braking force. Shinmura teaches a collision avoiding system for vehicles that includes determining and taking into account the bumpiness of the road during the automatic braking to avoid a collision, in order to compensate for the disturbance during braking operation (page 1, [0009]). It would have been obvious to one of ordinary skill



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in the art, at the time of invention, to determine and take into account the bumpiness of the road in determining the braking force in the system and method of the combination, in order to compensate for the disturbance during braking operation, as taught by Shinmura.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Breed et al. (US20020198632A1) teaches a method and arrangement for communicating between vehicles. Winner et al. (US006580385B1) teaches an object detection system. Breed et al. (US006370475B1) teaches an accident avoidance system. Sudo et al. (US005714928A) teaches a system for preventing collision for a vehicle. Yoshioka et al. (US005585798A) teaches an obstacle detection system for an automotive vehicle. Shaw et al. (US005529138A) teaches a vehicle collision avoidance system. Wetteborn (US005455669A) teaches a laser range finding apparatus. Shaw et al. (US005314037A) teaches an automobile collision avoidance system. De Saint Blancard et al. (US005296924A) teaches a process for detection of obstacles present, in particular, in front of an automotive vehicle. Chee et al. (US005046184A) teaches a method and apparatus for passive mode locking high power lasers. Hosokawa et al. (DE19713826A1) corresponds to US005864391A.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric M Gibson whose telephone number is (703) 306-4545. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (703) 305-8233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EMG

  
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PRIMARY EXAMINER